

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



A281.9  
Ag 8F  
Cop. 5



FOREIGN AGRICULTURAL  
ECONOMIC REPORT NO. 1 2 6

SUMMARY OF  
SUPPLY AND DEMAND  
FOR AGRICULTURAL  
PRODUCTS IN  
INDONESIA, 1975-85

SUMMARY OF SUPPLY AND DEMAND FOR AGRICULTURAL PRODUCTS IN INDONESIA, 1975-85. By E. Wayne Denney. Foreign Demand and Competition Division, Economic Research Service, U.S. Department of Agriculture. Foreign Agricultural Economic Report No. 126.

#### ABSTRACT

The study projects Indonesia's import requirements and export potential for major agricultural commodities through 1985. High and low forecast levels are given for production, consumption, and trade of each product. Rice production is expected to reach 22.0 to 23.7 million tons by 1985, and the rice deficit will decrease. Corn and palm oil will become more significant export commodities. Rubber and coffee exports are expected to remain strong, but tobacco, pepper, and tea will increase moderately. Wheat imports are projected to rise rapidly while cotton imports in 1985 may increase or decrease, depending on domestic cotton production.

## PREFACE

This report summarizes the major findings of a comprehensive study, Projections of Supply and Demand for Agricultural Products in Indonesia (1975-85). The study was conducted under contract for the Economic Research Service (ERS), U.S. Department of Agriculture, by the Faculty of Economics and Social Research, University of Indonesia. Objectives of the study included determining the potential import demand for and export potential of agricultural commodities in Indonesia, reviewing the developments and trends that have shaped production, consumption, and trade patterns, and making projections for 1975, 1980, and 1985.

The complete study is divided into three parts: Part I summarizes the projections and conclusions. This is followed by an analysis of significant developments in the Indonesian economy from 1960-72 that underlie projections for Indonesia's national product for 1975, 1980, and 1985. This, in turn, provides the framework for analyses of trends and projections of the individual commodities contained in Part III.

Copies of the entire study can be obtained by contacting the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161. A paper copy may be purchased for \$12.00 while a microfiche copy costs \$2.25. The report should be requested under the number AGERS-10.

Members of the Faculty of Economics who prepared the study include S. B. Joedono (Director), Muh. Arsjad Anwar, B. S. Mulyana, Wahyu Sukotjo, Saad Basjaib, Sadeli Nartanto, Farid Wadjidi, Mansjar, Budi Sugarda, Hary Rahardjo, Miranda Gultom, Maulana, Poernomo Singgih, Yusfik Effendi, Artjan, Soetijanta, and T. Poernomo. The study was initially under the leadership of Suhadi Mangdusuwondo. During the latter stages of the study, Muh. Arsjad Anwar was given the leadership assignment. Others participating in the study during its latter stages include Anwar Nasution, M. Joewono, Sumarno Surono, Pius Nugroho, Darmin Nasution, Nartano, Rondang Simandjuntak, Mirando Gultom, Agus Subijanto, Sujanti Sutomo, and Hadi Susanta.

Most of the projections made in the study were based on 1972 levels. Since 1972 was a very poor crop year in Indonesia, many projections to 1975 have an unusually high

annual growth rate. However, projections to 1980 and 1985 would be less affected by a low base year.

The results and views expressed in this report are based on the study prepared by the Faculty of Economics and Social Research, University of Indonesia, and do not necessarily reflect those of the U.S. Department of Agriculture. Some of the data used is not consistent with that published by the U.S. Department of Agriculture. The Asia Program Area, Foreign Demand and Competition Division, ERS, is responsible for any errors in interpretation of the basic study.

# CONTENTS

	<u>Page</u>
Economic Development, 1960-72 .....	1
Projected GNP for 1975, 1980, and 1985 .....	2
Commodity Projections .....	3
Consumption .....	3
Production .....	5
Rice .....	5
Corn .....	6
Wheat .....	7
Milk .....	8
Pepper .....	9
Coconuts .....	10
Palm Oil .....	11
Tallow .....	12
Tea .....	13
Coffee .....	14
Tobacco .....	15
Rubber .....	16
Cotton .....	17





SUMMARY OF SUPPLY AND DEMAND FOR AGRICULTURAL PRODUCTS  
IN INDONESIA, 1975-85

by

E. Wayne Denney, Agricultural Economist  
Foreign Demand and Competition Division  
Economic Research Service

Economic Development, 1960-72

Several significant shifts occurred in Indonesia's economic structure between 1950 and 1972. Prior to 1968, agriculture's contribution to the gross national product (GNP) fluctuated between 51.3 and 53.9 percent, but by 1972, it had declined to 43.9 percent. This decline was due to the relatively slow growth of the agricultural sector, compared with more rapid gains in the mining, manufacturing, construction, trade, and banking sectors.

In discussing Indonesia's economic developments, it is convenient to refer to 1960-66 as the Sukarno period and 1967-72 as the Suharto or "new order" regime. In general, the Sukarno period was a time of slow economic growth and high inflation rates, whereas the Suharto Government brought stability to the country by reducing inflation and accelerating economic growth.

The new order regime assumed control after failure of the Gestapo PKI rebellion in October 1965. The new Government immediately imposed stiff regulations governing the economy and--from 1967 to March 1969--implemented a rehabilitation program. A series of successful economic stabilization and rehabilitation efforts created a favorable climate for the business world and enabled the country to sharply raise production capacity.

The Government entered its first Pelita (5-year development plan) in April 1969. During this period, relatively stable economic growth occurred. Although food production did not increase as rapidly as in 1965, and even declined in 1972 because of severe drought conditions, GNP nevertheless increased because of the rapidly advancing industrial and mining sectors.

Economic activity between 1960 and 1972 was highlighted by the following developments:

GNP grew by an average annual rate of 2 percent in the Sukarno period, and in the Suharto period "new order" policies designed to curb Government spending and encourage foreign trade were largely responsible for the rapid growth during the late sixties.

Gross capital formation has shown an upward trend since the commencement of Pelita I, rising from 9.9 percent of GNP in 1969 to 15 percent in 1972. Prior to Pelita I, it varied between 7.2 and 10.8 percent of GNP.

Private consumption as a percent of GNP declined from 83.8 percent in 1969 to 77.3 percent in 1972. This indicates that the portion of personal income going to savings and capital formation increased.

Public consumption declined from 11.7 percent of GNP in 1960 to 8.2 percent in 1972, primarily because the Government sector became relatively smaller and Government expenditures increased less rapidly than its development expenditures.

Indonesia's balance-of-payments position also improved from 1960 to 1972 because of large foreign aid inflows and a rescheduling of old debts. Increased exports of crude oil and timber, coupled with the large inflow of foreign capital, enabled the country to import more capital goods, spare parts, and raw materials required for development.

From 1960 to 1972, the agricultural sector's average annual rate of growth was 3.2 percent. Rapid growth occurred in the forestry, livestock, and estate agricultural sectors, which grew 27.0, 5.8, and 4.7 percent, respectively, while the 1972 drought kept the growth rate of the foodstuff sector down.

#### Projected GNP for 1975, 1980, and 1985

The relatively high growth rates achieved during 1969-72 suggest that high growth rates in the future will likely occur. Indonesia's economy was stable through 1974 and the recently discovered mineral wealth reinforces the expectation of continued high growth. In making projections, several crucial assumptions were made: (1) public invest-

ment will increase by an average annual rate of 9.4 percent; (2) exports will expand by 9 percent annually from 1975 to 1980 and by a 10-percent annual rate from 1980 to 1985; (3) the Government will continue to emphasize economic development and will operate in a stable political environment.

Based on these assumptions, GNP is expected to grow from Rp. 4,539 1/ billion in 1972 to 11,239 billion in 1985 (at 1972 constant prices), representing annual growth rates of 7.3, 6.9, and 7.5 percent during 1972-75, 1975-80, and 1980-85, respectively.

Public savings will continue to grow, reaching 17 percent of GNP in 1975 and 23 percent by 1985. This indicates a marginal propensity to save of 0.28 by 1985. The increase will principally be caused by a Government policy encouraging greater savings through the banking system. Import expenditures will gradually climb to 23 percent of GNP by 1985, while total consumption expenditures will fall to only 77 percent by 1985.

Indonesia's population is projected to total 167 million by 1985, representing a 2.4-percent average annual growth rate.

#### Commodity Projections

Projections are made for Indonesia's import needs and export potential for major agricultural commodities through 1985. Import requirements are estimated for rice, wheat flour, milk, tallow, tobacco, and cotton. Potential exports are determined for corn, pepper, copra, palm oil, tea, coffee, tobacco, and rubber. For each commodity, demand equations are used to estimate future consumption requirements, while production projections are based primarily on linear trends. Indonesia's economic policies are taken into consideration when consumption and production projections are made. For example, if demand and supply equations result in huge import needs, which are not compatible with economic policy, some adjustment of the projection is necessary.

#### Consumption

For the purpose of projecting consumption, the commodities listed above are divided into the following five groups:

---

1/ 1 Rupiah = \$0.00267 in 1972.

Group I--rice, wheat flour, milk, pepper, tea, coffee, and tobacco. Consumption projections for this group are based on:

1. Estimated per capita consumption in the base year (1972).
2. Estimated elasticity of demand of household expenditures.
3. Projected per capita household expenditure and total population.
4. An assumption of constant real prices at the 1972 level.

Group II--corn. The projected consumption of corn is based on projections of both human and livestock requirements. Projected human consumption of corn is derived as for Group I. Livestock consumption is calculated from the projected dairy, beef, and poultry requirements for corn. Consumption by other types of livestock is considered insignificant.

Group III--copra, palm oil, palm kernels, and tallow. Consumption estimates for this group are based on home consumption of crude cooking oil and fresh coconuts, plus the use of these commodities by the soap, margarine, and cooking oil industries. In viewing the production prospects for soap, margarine, and cooking oil, a likely change in ingredient mix is also considered.

Group IV--cotton. Textile consumption is calculated to forecast cotton requirements. Expected changes in the consumption of cotton cloth and in domestic production relative to total textile consumption are also considered. Textile consumption is also projected as for Group I.

Group V--rubber. Projected rubber consumption is based on estimated GNP demand elasticity for rubber and Indonesia's future GNP. Household expenditure elasticities of demand were derived from cross section data of the 1969 National Socio-Economic Survey. The GNP elasticity of demand for rubber was calculated from time series data.

Two functions were used to estimate elasticities, the double-log and semi-log. The function used depended on whether the elasticity was expected to be constant or to decline at increasing consumption levels. The double-log (constant) function was used for corn, wheat flour, milk, pepper, cooking oil, fresh coconuts, and rubber. The semi-log (declining)



was used for rice, tea, coffee, and tobacco. Both functions were used for textiles.

### Production

Production projections for major crops were calculated from projected production areas and projected per hectare yields. Milk production was derived from the projected dairy population and milk output per cow.

Crop area can be divided into two broad groups. Annuals include rice, corn, tobacco, and cotton. For this group, production area is considered equal to planted area. Yields of these crops are highly influenced by variety, soil condition, and cultivation techniques, including fertilization and pest control. (2) Perennials include pepper, coconuts, oil palm, tea, coffee, and rubber. Production area is generally less than planted area, and yield is a function of the age composition of the plantings as well as the factors considered for annuals.

### Rice

Rice is the staple food of Indonesia. About 60 percent of the country's carbohydrate production comes from rice. Rice is the dominant item in the Consumer Price Index (CPI), accounting for 37 percent of the total. Because of its significance, several crucial assumptions were made regarding future rice consumption: (1) The subsidy for rice will gradually be decreased in order to direct funds toward other purposes, assumed to be more productive; (2) efforts aimed at improving domestic rice marketing will be intensified and result in higher farm prices; (3) The floor price of rice will be raised to stimulate domestic production and decrease import requirements, thereby conserving foreign exchange.

After considering each of the above, total rice consumption is projected to increase from 13.5-13.7 million tons in 1972 <sup>2/</sup> to 21.4-22.5 million tons in 1985, with an annual growth of nearly 4 percent through 1985. Per capita rice consumption is projected to increase from 111-113 kilograms in 1972 to 130-137 kilograms in 1985.

---

<sup>2/</sup> A range is given for 1972 since no official data on rice consumption were available when the report was prepared.

The potential for increasing rice production in Indonesia through 1985 is considered very good for two reasons: (1.) rice yields throughout the country can be substantially increased; and (2.) there is considerable opportunity for rice area expansion outside of Java. Land available for new rice production in Java is extremely limited, although more double cropping is expected.

Total Indonesian rice area will gradually expand from 8.0 million hectares in 1972 to 9.4-10.1 million in 1985. Most of the increase will be wet-field paddy production outside of Java.

Rice yields in Indonesia increased very slowly until 1967 when the BIMAS 3/ and INMAS 3/ rice intensification programs started to make significant progress. The area used for rice production under these programs increased from 1.6 million hectares in 1968 to over 3.9 million in 1973. In 1973, rice areas planted under BIMAS and INMAS programs averaged approximately 69 percent larger yields per hectare than nonprogram areas. This suggests that by expanding the programs more rice can be produced. The study projects per hectare yields of wet rice under the intensification programs will increase 1 percent annually through 1974 and by 1.5 percent annually during 1975-85.

Based on both area and yield projections, rice production is estimated to increase from 13.3 million tons in 1972 to 22.0-23.7 million in 1985. From 1975-85, annual growth rates may be slower than 5.3-6.6-percent range for 1972-75. The relatively high growth rate for 1972-75 resulted from a drop in rice output in 1972.

Combining production and consumption projections, rice imports are projected at 273,000 tons in 1985, following annual declines of 4.9 percent during 1972-75 and 15.6 percent during the 1975-80 period, with little change thereafter.

### Corn

Corn is produced and consumed as the staple food in many areas of Indonesia that are either not suitable for rice growing or where rice production is less than consumption requirements. Most of the corn produced is often mixed with rice and consumed domestically. The use of corn as an animal feed is currently not great but is expected to expand considerably by 1985.

---

3/ Government-sponsored programs to increase production of basic food crops.

Total human consumption of corn is projected to increase from 2.32-2.37 million tons in 1972 to a high of 2.47-2.53 million in 1980, and then decline to 2.41-2.47 million in 1985. These projections were made using a constant household expenditure elasticity of demand of -0.39.

Corn consumption by livestock is projected to increase from 31,000 tons in 1972 to 154,000-172,000 in 1985. Growth rates will range from 11-14 percent through 1985. The rapidly expanding poultry industry will account for most of the increased consumption by livestock.

Corn area is projected to increase from 2.7 million hectares in 1972 to 2.7-3.1 million in 1975 and 2.9-3.3 million in 1985. All of the increase will occur in the outer islands.

The average corn yield is expected to increase from 959 kilograms per hectare in 1972 to 1,291 in 1985, with annual growth rates rising from slightly more than 1 percent annually at the beginning of the period to nearly 3 percent by 1985. The increase will result from the spread of intensive cultivation, and an increase in the yields of both intensively and traditionally cultivated areas. Realization of these increases will require improvements in extension services, marketing, and transportation.

Corn output is projected to increase from 2.58 million tons in 1972 to 3.72-4.27 million in 1985, representing annual growth rates of 1.8-6.0, 2.7-2.9, and 3.6-4.0 percent during 1972-75, 1975-80, and 1980-85, respectively.

The expansion in corn production coupled with a slight downturn in total consumption by 1985 points to sharply-rising corn exports. Japan is considered the most likely market for Indonesian corn, not only because of the short distance involved but because the Japanese have invested heavily in Indonesia's corn production. Indonesia's corn export potential will increase from 162,000-551,000 tons in 1975 to 1.00-1.65 million tons in 1985.

### Wheat

Because of geographical location and climate, wheat is not grown in Indonesia except for research purposes. Nevertheless, wheat flour has become increasingly important in recent years.



Prior to 1971, no wheat flour mills existed in Indonesia, consequently, wheat flour was imported. Wheat flour mills began operating in late 1971; and, since then, very little wheat flour has been imported.

Because of the low per capita consumption of wheat flour, the double-log function was considered the best for projecting future requirements.

The expenditure elasticity of demand for wheat flour was estimated at 1.5, based on Jakarta data only. The price elasticity of demand for wheat flour is -1.41 and its cross-elasticity of demand with rice is estimated at 1.22. 4/

Per capita wheat flour consumption is projected to climb from 3.67 kilograms in 1975 to 6.03 in 1985. This represents an average annual per capita increase of about 5 percent. Projected total wheat flour consumption for 1975, 1980, and 1985 is 480,000, 668,000 and 993,000 tons, respectively. Construction of 4 additional wheat flour mills is required to achieve the 1985 consumption level if all wheat flour is to be processed domestically.

The study recognizes that these estimates are rather conservative. Subsidies on both rice and wheat are expected to decrease so that the relative price between rice and wheat flour should stay about the same. This should enable wheat products to become more important in the Indonesian diet even though rice consumption is projected to increase sharply through 1985.

Based on the above projected wheat flour consumption and a conversion factor of wheat into wheat flour of 72 percent, the 1975, 1980, and 1985 wheat imports would be 666,000, 927,000, and 1.38 million tons, respectively. The United States and Australia are expected to be the principal suppliers.

### Milk

Indonesia's milk consumption is still considered very low, even for a developing country. But milk has been recognized as an important foodstuff and source of protein, especially for children. Both large dairies and on a very small

---

4/ This means that each 1-percent increase in wheat flour prices would cause a corresponding decrease in consumption of 1.41 percent, whereas each 1-percent increase in rice prices would cause a corresponding increase in wheat flour consumption of 1.22 percent.



scale individuals produce milk, but butter, cheese, and powdered milk are not produced. Indonesian consumer still prefer condensed or powdered milk to fresh milk since refrigeration capacity is limited and fresh milk is often considered unsafe.

The household expenditure elasticity of demand for milk is assumed to be constant; consequently, the double-log function was used for estimating the elasticity. The resulting demand elasticity of 1.83 is the highest for any of the commodities analyzed in the study.

Milk consumption is projected to increase from 154,000 tons (fresh milk equivalent) in 1972 to 442,000 in 1985, with annual growth rates of 8.8 percent for 1972-75, 7.6 percent for 1975-80, and 9.1 percent for 1980-85. Per capita consumption will increase from 1.27 kilograms in 1972 to 2.68 in 1985.

Fresh milk production is projected to increase from 37,700 tons in 1972 to 104,000-202,000 by 1985. This projection assumes that both output per cow and number of dairy cows will increase sharply by 1985. It parallels goals in the current 5-year plan.

These projections assume Government support to expand herds, improve the herds by importation and artificial insemination, and improve milk marketing facilities.

Depending on the success of milk production efforts, milk imports will be between 240,000-338,000 tons in 1985. This implies that milk self-sufficiency will range between 24 and 46 percent.

### Pepper

Indonesia is an important world producer of both black and white pepper. Prior to World War II, Indonesia was the world's leading pepper producer and currently ranks second to India. All pepper is grown by smallholders and nearly three-fourths of it is exported.

The current per capita pepper consumption of 55 grams is projected to increase to 73 grams by 1985, as total consumption increases from 6,700 to 12,000 tons. A constant expenditure elasticity of demand of 0.54 was used in making the consumption projections.

Pepper production is forecast to increase from 31,000 tons in 1972 to 42,000-48,000 by 1985, with annual growth rates of about 2.0-3.5 percent throughout the period. Production area is projected to increase from 38,100 hectares in 1972 to 43,000 in 1985, increasing slightly more than 1 percent annually. Better pest control techniques should result in average yields increasing from the 1972 level of 814 kilograms per hectare to 970-1,100 by 1985.

Pepper exports are projected to increase from 24,300 tons in 1972 to 29,900-35,800 tons in 1985, with the most rapid growth occurring from 1975-80. Reaching the high projection will require not only quality improvements, but also development of new markets outside Western Europe and the United States.

### Coconuts

Nearly all of the coconuts grown in Indonesia are produced by smallholders. The coconut industry used to be a major source of export revenue but has deteriorated badly in the last four decades. Copra exports averaged 515,000 tons annually during 1935-39 but averaged only 158,000 tons during 1966-70. Copra exports stood at 42,000 tons in 1972 and were banned in 1973. The long-term decline occurred because consumption increased and production stagnated.

Coconuts are consumed fresh, processed into kelentik oil 5/ or dried into copra.

Using a constant expenditure elasticity of demand of 0.51 for fresh coconuts, consumption is projected to increase from 537,000 tons (copra equivalent) in 1972 to 955,000 in 1985, growing at an average annual rate of about 4.5 percent. Kelentik oil consumption is expected to remain constant at 151,000 tons (copra equivalent). The reasons for this are that commercial coconut oil should become relatively cheaper with increased production and households would prefer not to make their own oil. Total consumption of fresh coconuts for these two purposes is, thus, expected to increase from 691,000 tons in 1972 to 1.11 million in 1985.

Copra consumption by coconut oil factories is projected to increase from 820,000 tons in 1972 to 1.45-1.48 million in 1985, representing annual growth rates of 1.8 percent for 1972-75, 4.1-4.5 percent for 1975-80, and 6.5-6.6 percent during 1980-85. The relatively slow growth rate during 1972-75 is attributed to the relatively small growth in coconut production and some copra exports. However,

---

5/ Coconut oil made locally from heated coconut milk.

production will increase and exports will cease after 1975, thereby increasing copra availability to oil factories.

Coconut production is projected to increase from 1.55 million tons (copra equivalent) in 1972 to 2.13-2.44 million in 1985, growing 1.2-2.3 percent for 1972-75, 2.0-3.0 percent for 1975-80, and 3.7-4.9 percent during 1980-85.

The projected growth will come mainly from higher yields. Yield per tree <sup>6/</sup> is projected to increase from 9.4 kilograms in 1972 to 11.8-13.4 in 1985. Number of productive trees is projected to increase at annual rates of 0.2 percent for 1972-75, 0.5 percent for 1975-80, and 1.1-1.3 percent for 1980-85. This relatively small growth is due to the large number of trees which will become nonproductive and new plantings do not bear fruit until they are at least 7 years of age.

Because of stagnating production and rising consumption, copra imports may be necessary in the future. Based on the supply and demand equations, copra imports are expected to reach 55,000-410,000 tons by 1985. However, these projections are based mainly on consumption trend figures and several reasons point to only minimal copra imports by 1985: (1) purchasing large quantities of copra in the world market would be difficult; (2) improvement in marketing should mean that prices in production areas will increase relative to those in consuming areas, thus inhibiting a consumption increase in the production areas; and (3) a shortage of copra in Indonesia could force the real copra price much higher than the 1972 base year price.

### Palm Oil

Unlike coconuts, all of the palm oil in Indonesia is produced by estates. During 1969-72, 69 percent of the total was produced by state estates and the remainder by private estates. Most of the palm oil and palm kernel oil are exported. Palm oil output levels stagnated during the forties, fifties, and sixties, but the record output level of 1939 was exceeded in 1971. Domestically, palm oil is used primarily in the soap and margarine industries.

Palm oil consumption is projected to increase from 29,000 tons in 1972 to 119,000-160,000 in 1985, with annual increases of 14-17 percent for 1972-75, 11.8-15.9 percent for 1975-80, and 9.6-10.7 percent for 1980-85. These projec-

---

<sup>6/</sup> Trees in this instance refer to those at the peak productive age of 16 to 50 years.



tions assume the proportion of palm oil used in the production of soap, margarine, and cooking oil will increase.

Palm oil production is projected to increase from 270,000 tons in 1972 to 691,000-774,000 in 1985, representing annual growths of 10.5 percent for 1972-75, 7.1-8.1 percent for 1975-80, and 6.1-7.5 percent for 1980-85.

Production area is expected to increase from 100,000 hectares in 1972 to 206,000-225,000 in 1985, with the area growth slowing toward the end of the period. It is assumed that increased world production of palm oil during the 1970's will depress prices and result in a decreased rate of oil palm planting.

Average yield of palm oil is projected to increase from 2,710 kilograms per hectare in 1972 to 3,350-3,440 in 1985, increasing 1.5-2.0 percent annually. Yield increase would be larger except for the following: (1) little improvement is expected in age composition of the plantings; (2) additional yield increase from fertilization and other improvements in cultivation techniques are smaller at higher yield levels; and (3) after 1980, some of the new production areas will consist of smallholder plantings, which generally have a poorer standard of cultivation than large estates.

Palm kernel production will parallel that of palm oil production in advancing from 59,000 to 152,000-170,000 tons. Palm kernel production is normally 22 percent of palm oil production.

Palm oil exports are projected to increase from 243,000 tons in 1972 to 530,000-655,000 by 1985. With palm oil exports from Malaysia rising at an even faster rate, competition will be keen and increase the need to improve quality and develop markets outside Western Europe and the United States.

### Tallow

Tallow is one of the main raw materials normally used in the soap industry. Like hardened oils and fatty acids, it is frequently used in the production of margarine and shortening, grease, abrasives, cosmetics, and paints. The soap industry in Indonesia prefers to use coconut and palm oil, which explains why there is no commercial rendering of raw fat into tallow and why imports are negligible.

Also, the licensing requirements along with the 40-percent ad valorem duty on tallow imports does not encourage foreign purchases.

Because of the uncertainties regarding potential use for tallow in Indonesia, no firm projections are made for consumption or production. Instead, assuming that about 0.5 ton of tallow is needed per ton of soap, tallow requirements for soap factories are estimated at 74,000-79,000 tons for 1975 and 84,000-107,000 for 1985. However, the actual use of tallow in the soap industry will be much less. The tallow import requirements shown in table 8 assume that tallow will account for 10 percent of the soap industry's needs in 1975, and increase gradually to 20 percent in 1980 and 30 percent in 1985.

### Tea

Tea has been grown in Indonesia since the beginning of the 19th century but orderly planting commenced about a century later. Large estates produce black tea mainly for export, while smallholders produce tea for domestic consumption.

Prior to World War II, Indonesia's tea exports ranked third to India and Ceylon (Sri Lanka), with total exports reaching a high of 72,000 tons in 1938. However, during the war and the following turbulent years, about half of the tea plantations were destroyed, many of them replaced by food crops. It was not until the late sixties that a concerted effort was made to rehabilitate the tea industry and start new plantations.

Using a household expenditure elasticity of demand of 0.73, tea consumption is expected to increase from 35,000 tons in 1972 to 66,000 in 1985, growing nearly 5 percent annually. Per capita consumption is projected to increase from 300 grams in 1972 to 400 grams in 1985.

Tea production is projected to increase from 52,000 tons in 1972 to 101,000-106,000 tons in 1985, with annual growth rates of 18.6-19.2 percent (mainly a recovery) for 1972-75, 2.4-2.8 percent for 1975-80, and 2.5-2.8 percent for 1980-85. Estates are expected to increase production from 44,000 tons in 1972 to 65,000-68,000 tons in 1985, and smallholder production from 7,000 tons to 36,000-39,000 tons.

According to the low projection, tea exports would decline from 39,600 tons in 1972 to 35,500 tons in 1985. Using the high projection, exports would increase until 1980 reaching a level of 41,100 tons, then decline slightly to 40,000 tons by 1985. Yields must be improved considerably before substantial export increases can occur. Efforts aimed at improving the quality of tea exports are also necessary to make Indonesian tea more competitive with that exported by India and Sri Lanka.

### Coffee

During 1968-72, about 90 percent of Indonesia's coffee production and 82 percent of its exports came from smallholders. Prior to World War II, estates accounted for the majority of coffee production and exports. This change resulted from the decline of estate area and yields and the rapid increase in area and yields of smallholders.

The average annual export volume from 1968-72 was 96,000 tons, or about 55 percent of production. Most of the production and nearly all of the coffee exports consist of the robusta variety.

Coffee consumption is expected to increase from 77,000 tons in 1972 to 141,000 tons in 1985, growing 4.4-4.9 percent annually. Per capita consumption is projected to increase from 639 grams in 1972 to 856 grams in 1985.

Coffee production is projected to increase from 170,000 tons in 1972 to 299,000-351,000 tons in 1985. The high growth rate during 1972-75 was due to the unusually small coffee crop harvested in 1972.

Smallholder production is expected to increase from 151,000 tons in 1972 to 271,000-321,000 in 1985, with annual growth rates of 10.7-12.3 percent for 1972-75, 2.9-4.2 percent for 1975-80, and 2.7-4.1 percent for 1980-85. Estate production is expected to advance from 19,000 tons in 1972 to 28,000-30,000 tons in 1985. The increase in smallholder production is expected mainly as a result of improved yields. Average smallholder yields are expected to increase from 648-668 kilograms per hectare in 1975 to 782-875 in 1985. This assumes improved marketing practices would raise the farmers' price and thus encourage better cultivation. Smallholder area is expected to increase 3.0-8.6 percent during 1972-85, while estate area should increase a total of 6.5-7.9 percent during the same period.



## Tobacco

Tobacco is one of the few commodities that Indonesia both exports and imports. Indonesia exports Dali, Verstenlanden, and Java tobaccos, and imports the Virginia variety used for cigarettes. During 1970-72, smallholders grew about 87 percent of the tobacco produced in Indonesia; Government and private estates produced the remainder. A high percentage of the tobacco produced by smallholders is consumed domestically, while nearly all the estate tobacco is exported.

Tobacco consumption is projected to increase from 53,700 tons in 1972 to 90,200-97,000 in 1985, with per capita consumption climbing from 442 grams to 547-588 grams. A household expenditure elasticity of demand of 0.5-0.7 was used.

Tobacco production is projected to increase from 77,000 tons in 1972 to 108,000-122,000 tons in 1985. Smallholder production is expected to increase from 66,000 tons in 1972 to 93,000-107,000 tons in 1985, and estate production is expected to increase 4,000-5,000 tons during the period.

Production increases for both smallholders and estates will result mainly from better yields. The average smallholder yield is expected to increase 32-44 percent during 1972-85, while smallholder area will only increase 6-13 percent. Larger smallholder yields are expected to accompany marketing improvements that should result in higher prices received by farmers and thus encourage better production practices. Increases in yield and production of Virginia tobacco are expected for both smallholders and estates because of the big demand for production of Western-style cigarettes and for local cigarette mixtures.

Potential growth of smallholder area is limited since most smallholder plantings are in the overcrowded island of Java. Estate area increase will also be limited, because most estate production is of high-quality cigar tobacco for which demand is weak. Although flue-cured tobacco is in greater demand, tobacco producers have resisted growing more of it because the price is so much lower.

Assuming production will continue at the high projection level, tobacco exports should increase from 21,300 tons in 1972 to 40,100-45,800 in 1985, with annual growths of 21.6-23.2 percent for 1972-75 and 3.9-4.8 percent for 1975-80, and decline 0.5-1.0 percent annually during 1980-85.

Tobacco imports are projected to increase from 7,600 tons in 1972 to 13,600-14,600 tons by 1985. This indicates that net tobacco exports will increase each year.

## Rubber

Rubber has traditionally been Indonesia's leading agricultural export. Although price declines hindered rubber exports during the sixties and into the seventies, oil price hikes have made synthetic products more expensive and natural rubber prices have strengthened.

In 1972, nearly 2.3 million hectares were devoted to rubber, of which about 80 percent were smallholder plantings. Approximately 43 percent of the estate rubber area in Indonesia is owned by state enterprises; the remainder is owned by national or foreign-private estates. About three-fourths of the rubber area planted is in Sumatra, and more than a fifth is in Kalimantan. Very little rubber is grown on Java.

The rubber area harvested in 1972 totaled 1.35 million hectares, or about 59 percent of Indonesia's total rubber area. Of the 41 percent not harvested, 24 percent consisted of immature rubber trees, 11 percent was either damaged or no longer producing, and 6 percent was left untapped mainly because of low yields.

Rubber consumption totaled only 40,000 tons in 1972, or less than 5 percent of production. However, rubber consumption is expected to increase 8-11 percent annually and by 1985 should reach 108,000-158,000 tons. A constant income elasticity of demand of 1.12 was used.

Rubber production is projected to increase from 817,000 tons in 1972 to 1.26-1.47 million in 1985, with annual growth of 1.9-3.2 percent for 1972-75, 2.8-4.6 percent for 1975-80, and 4.8-5.5 percent for 1980-85. Smallholder production is expected to increase 34-55 percent from 568,000 tons in 1972 to 762,000-882,000 tons in 1985. Estate production is expected to increase 98-135 percent from 249,000 tons in 1972 to 493,000-586,000 tons in 1985.

Two major reasons are given for the more rapid rate of increase by estate producers and the acceleration in total rubber production during 1980-85. First, with improved cultivation and the use of higher-yielding clones, rubber trees are capable of producing at 6 or 7 years of age instead of age 10. Second, most of the high-yielding clones are controlled by estates; hence smallholders will not



have ready access to high-yielding clones, so their production will not increase as rapidly as estates.

Other reasons for larger estate yields are the use of the stimulant ethrel that increases latex production and the use of fertilizer, both practiced mainly on estates.

The projection for smallholder production includes an increase in area of 4.4-14.5 percent and an increase in average yield of 29.3-34.1 percent for 1972-85. For estates, the expectations are increases of 38.5-44.5 percent for area and 43.0-62.9 percent for average yield.

Rubber exports are projected to increase from 765,000 tons in 1972 to 1.10-1.36 million tons in 1985, with most of the increase taking place during 1980-85. Considering the excellent prospects for strong world demand, these projections are admitted to be rather conservative. Many rubber trees begin producing during the sixth year and the new plantings will result in a higher quality latex being exported in future years.

### Cotton

With an improved economic situation and a liberal Government policy toward foreign and domestic capital investment, Indonesia's textile production has expanded rapidly in recent years.

Cotton is the major raw material used in textile production and most of the cotton is imported. Indonesia's 1972 cotton production was only 8 percent of consumption, or 2,351 tons of a total consumption of 27,674 tons. Cotton is produced in Indonesia primarily in Central and East Java, Lombok, and Bali, by both smallholders and estates.

In making cotton consumption projections, it was assumed that cotton textiles as a percentage of total textile consumption would gradually decline to 48.8, 38.8, and 32.5 percent in 1975, 1980, and 1985, respectively. On this basis, cotton consumption is projected to increase from 27,000 tons in 1972 to 59,500-74,900 tons in 1985. A semi-log function was used for the low projection expenditure elasticity of demand, and a double-log function was used for the high projection, indicating that the elasticity may be either constant or decline at increasing consumption levels. The respective elasticities were 0.99 and 1.14.

Cotton production in Indonesia has remained relatively static since 1942. However, cotton yields have shown a strong uptrend while area has been declining. Based on successful research efforts and Government plans to dramatically increase cotton production, it is projected to increase from a mere 2,351 tons in 1972 to 36,000-38,000 tons in 1985, with annual growth rates of 27.7 percent for 1972-75, 32.1-36.3 percent for 1975-80, and 12.4-15.3 percent for 1980-85.

Area expansion is expected to increase rapidly, from 10,000 hectares in 1972 to 120,000 hectares in 1985. Average yields are projected to either remain constant at 300 kilograms per hectare or increase to as much as 400 by 1985.

Increase in area and yield will require improvement in the price received by farmers, through better marketing practices and revision of the fixed price for domestically produced cotton goods. An improvement and expansion of current extension efforts is also required.

The study recognizes that these production forecasts are very ambitious in view of cotton developments during the past three decades. Considering the very limited availability of land in East Java, expansion plans can be realized only if significant improvements are made in farm prices, thereby inducing farmers to switch from other crops to cotton. Government assistance is also required to eradicate diseases and provide general technical assistance in cotton growing techniques.

Cotton imports were 25,300 tons in 1972, projected imports range from 11,500 tons to 38,900 tons by 1985. With high production and low consumption, imports are expected to decline from 25,300 tons in 1975 to 11,500 tons in 1985. However, if plans to bolster cotton production fail, and cotton production increases only slightly above the 1972 output, the high consumption projection will require 38,900 tons to be imported by 1985.



Table 2--Selected national account data, Indonesia, average 1960-65 and annual 1966-72

(1960 prices)

Item	Unit	1960-65	1966	1967	1968	1969	1970	1971	1972
<b>Private consumption:</b>									
Total.....: Bil. rps		342.5	350.8	381.8	416.7	441.2	453.7	475.5	498.5
Per capita.....: Rps		3,439.5	3,239.2	3,441.8	3,747.3	3,833.8	3,904.5	4,002.5	4,102.5
Percent of GNP....		83.2	80.1	85.9	84.6	83.8	80.1	78.7	77.3
<b>Public consumption:</b>									
Total.....: Bil. rps		37.3	40.3	35.8	40.6	42.1	49.2	52.7	52.7
Percent of GNP....: Rps		9.1	9.2	8.1	8.2	8.0	8.7	8.7	8.2
<b>Gross capital formation:</b>									
Total.....: Bil. rps		36.1	40.7	33.2	40.6	52.2	69.4	81.0	99.0
Percent of GNP....		8.8	9.3	7.2	9.9	9.9	12.2	13.4	15.0
Exports.....: Bil. rps		53.3	55.6	55.5	61.3	69.9	82.3	91.7	123.2
Imports.....: Bil. rps		53.7	45.5	58.3	62.3	74.9	83.7	92.0	121.0
Trade balance.....: Bil. rps		-4	10.1	-2.8	-1.0	-4.7	-1.4	-3	2.2
GNP.....: Bil. rps		411.5	438.1	444.3	492.7	526.5	566.2	603.9	645.5
Per capita.....: Rps		4,123.8	4,045.0	4,010.0	4,430.8	4,634.7	4,872.6	5,083.3	5,308.4
GNP at market prices.....: Bil. rps		414.8	441.9	448.0	496.9	530.8	570.9	608.9	650.8
GNP real growth.....: Percent		1.7	2.7	1.4	10.9	6.9	7.5	6.7	6.9

Source: Central Bureau of Statistics.

Table 3--Per capita consumption of selected agricultural commodities, Indonesia, estimated 1972 and projected 1975, 1980, and 1985

Commodity and projection	Expenditure: elasticity: of demand :	1972 :	Kilograms			Average annual rate of growth			
			1975 :	1980 :	1985 :	1972-75 :	1975-80 :	1980-85 :	Percent
Rice:	:	:	:	:	:	:	:	:	:
Low.....	.58	111	115	121	130	1.2	1.0	1.4	
High.....	.58	113	118	126	137	1.5	1.2	1.7	
Corn:	:	:	:	:	:	:	:	:	:
Low.....	-.39	19.1	18.3	16.9	14.6	-1.4	-1.6	-2.9	
High.....	-.39	19.5	18.7	17.3	15.0	-1.4	-1.5	-2.8	
Wheat:	:	:	:	:	:	:	:	:	:
Low.....	1.50	3.2	3.7	4.6	6.0	5.0	4.4	5.8	
High.....	1.50	3.2	3.7	4.6	6.0	5.0	4.4	5.8	
Milk:	:	:	:	:	:	:	:	:	:
Low.....	1.83	1.27	1.52	1.95	2.68	6.2	5.1	6.6	
High.....	1.83	1.27	1.52	1.95	2.68	6.2	5.1	6.6	
Cooking oil:	:	:	:	:	:	:	:	:	:
Low.....	1.25	3.88	4.40	5.30	6.81	4.3	3.8	5.1	
High.....	1.25	3.88	4.40	5.30	6.81	4.3	3.8	5.1	
Fresh coconuts:	:	:	:	:	:	:	:	:	:
Low.....	.51	4.42	4.66	5.08	5.79	1.78	1.74	2.65	
High.....	.51	4.42	4.66	5.08	5.79	1.78	1.74	2.65	
Grams									
Pepper:	:	:	:	:	:	:	:	:	:
Low.....	.54	55	58	64	73	1.8	2.0	2.7	
High.....	.54	55	58	64	73	1.8	2.0	2.7	
Tea:	:	:	:	:	:	:	:	:	:
Low.....	.73	300	321	354	400	2.3	2.0	2.5	
High.....	.73	300	321	354	400	2.3	2.0	2.5	
Coffee:	:	:	:	:	:	:	:	:	:
Low.....	.75	639	686	757	856	2.4	2.0	2.5	
High.....	.75	639	686	757	856	2.4	2.0	2.5	
Tobacco:	:	:	:	:	:	:	:	:	:
Low.....	.50	442	464	499	547	1.6	1.5	1.9	
High.....	.50	442	473	521	588	2.3	2.0	2.4	
Cotton:	:	:	:	:	:	:	:	:	:
Low.....	.99	837	921	1,050	1,230	3.2	2.7	3.2	
High.....	1.14	837	939	1,116	1,414	3.9	3.5	4.8	



Table 4--Total consumption of selected agricultural commodities, Indonesia, estimated 1972 and projected 1975, 1980, and 1985

Commodity and projection	1972	1975	1980	1985	Average annual rate of growth		
					1972-75	1975-80	1980-85
					Percent		
		1,000 tons					
Rice:							
Low.....	13,480	15,003	17,729	21,403	3.7	3.4	3.8
High.....	13,738	15,446	18,848	22,525	4.0	3.6	4.1
Corn:							
Low.....	2,323	2,390	2,478	2,407	1.0	.7	-.6
High.....	2,372	2,442	2,537	2,473	1.0	.8	-.5
Wheat flour:							
Low.....	385	480	668	993	7.6	6.8	8.3
High.....	385	480	668	993	7.6	6.8	8.3
Milk:							
Low.....	154.3	198.5	285.9	441.9	8.8	7.6	9.1
High.....	154.3	198.5	285.9	441.9	8.8	7.6	9.1
Pepper:							
Low.....	6.7	7.6	9.3	12.1	4.3	4.1	5.3
High.....	6.7	7.6	9.3	12.1	4.3	4.1	5.3
Cooking oil:							
Low.....	472	575	777	1,124	6.8	6.2	7.7
High.....	472	575	777	1,124	6.8	6.2	7.7
Fresh coconuts:							
Low.....	537	609	745	955	4.3	4.1	5.1
High.....	537	609	745	955	4.3	4.1	5.1
Tea:							
Low.....	35.2	41.9	51.9	66.0	6.1	4.4	4.9
High.....	35.2	41.9	51.9	66.0	6.1	4.4	4.9
Coffee:							
Low.....	77.7	89.6	111.0	141.2	4.9	4.4	4.9
High.....	77.7	89.6	111.0	141.2	4.9	4.4	4.9
Tobacco:							
Low.....	53.7	60.6	73.1	90.2	4.1	3.8	4.3
High.....	53.7	61.8	76.4	97.0	4.8	4.3	4.9
Cotton:							
Low.....	27.7	34.5	47.4	59.5	6.1	5.6	6.4
High.....	27.7	35.2	50.4	74.4	8.8	6.7	8.5

Table 5--Production of selected agricultural commodities, Indonesia, estimated 1972 and projected 1975, 1980, and 1985

Commodity and projection	1972	1975	1980	1985	Average annual rate of growth		
					1972-75	1975-80	1980-85
							Percent
							1,000 tons
Rice:							
Low.....	13,305	15,774	18,741	21,988		5.8	3.5
High.....	13,305	16,124	19,528	23,693		6.6	3.9
Corn:							
Low.....	2,578	2,723	3,111	3,721		1.8	2.7
High.....	2,578	3,066	3,531	4,292		6.0	2.9
Milk:							
Low.....	37.7	47.5	70.6	104		8.0	8.2
High.....	37.7	55.5	106.0	202		13.8	13.7
Pepper:							
Low.....	31.0	32.6	37.8	42.0		1.7	2.6
High.....	31.0	33.3	39.9	47.8		2.3	3.7
Copra:							
Low.....	1,552	1,608	1,775	2,129		1.2	2.0
High.....	1,552	1,656	1,920	2,441		2.3	3.0
Palm oil:							
Low.....	270	364	513	691		10.5	7.1
High.....	270	364	538	774		10.5	8.1
Palm kernels:							
Low.....	59	80	113	152		10.7	7.1
High.....	59	80	118	170		10.7	8.1
Tea:							
Low.....	51.8	80.7	90.4	101.5		18.6	2.4
High.....	51.8	81.6	93.0	106.3		19.2	2.8
Coffee:							
Low.....	170	226	261	299		10.0	2.9
High.....	170	235	288	351		11.4	4.2
Tobacco:							
Low.....	76.6	82.1	94.0	107.6		2.3	2.7
High.....	76.6	87.5	106.9	122.4		4.5	2.7
Rubber:							
Low.....	817	864	991	1,255		1.9	2.8
High.....	817	896	1,124	1,468		3.2	4.6
Cotton:							
Low.....	2.4	5.0	20.1	36.0		27.7	32.1
High.....	2.4	5.0	23.5	38.0		27.7	36.3

Table 6--Harvested area of selected agricultural commodities, Indonesia, estimated 1972 and projected 1975, 1980, and 1985

Commodity and projection	1972	1975	1980	1985	Average annual rate of growth		
					1972-75	1975-80	1980-85
			<u>1,000 hectares</u>			<u>Percent</u>	
Rice:							
Low.....	7,983	8,551	9,052	9,432	2.3	1.1	0.8
High.....	7,983	8,625	9,291	10,065	2.6	1.5	1.6
Corn:							
Low.....	2,690	2,741	2,809	2,882	.6	.5	.5
High.....	2,690	3,067	3,188	3,325	4.5	.7	.8
Pepper:							
Low.....	38.1	38.0	40.7	43.3	-1	1.4	1.2
High.....	38.1	38.0	40.7	43.3	-1	1.4	1.2
Coconuts:							
Low.....	164.7	165.6	169.6	179.8	.2	.5	1.2
High.....	164.7	165.6	169.7	181.6	.2	.5	1.4
Oil palm:							
Low.....	100	127	165	206	8.3	5.4	4.5
High.....	100	127	173	225	8.3	6.4	5.4
Coffee:							
Low.....	368	349	364	380	-1.5	.9	.9
High.....	368	354	377	400	-1.2	1.1	1.2
Tobacco:							
Low.....	176	177	181	187	.2	.5	.6
High.....	176	184	194	204	1.2	1.2	1.0
Rubber:							
Low.....	1,346	1,356	1,410	1,507	.2	.8	1.3
High.....	1,346	1,395	1,469	1,631	1.2	1.1	2.1
Cotton:							
Low.....	10.2	16.5	67.0	120.0	12.8	32.3	12.4
High.....	10.2	16.5	67.0	120.0	12.8	32.3	12.4



Table 7--Yield of selected agricultural commodities, Indonesia, estimated 1972  
and projected 1975, 1980, and 1985

Commodity and projection	1972	1975	1980	1985	Average annual rate of growth		
					1972-75	1975-80	1980-85
					Kilograms per hectare		
					Percent		
Rice:							
Low.....	32.1	35.5	39.8	44.8	3.4	2.3	2.4
High.....	32.1	36.0	40.4	45.3	3.9	2.3	2.3
Corn.....							
Low.....	959	994	1,107	1,291	1.1	2.3	3.1
High.....	959	1,000	1,107	1,291	1.4	2.1	3.1
Milk: 1/.....							
Low.....	554	572	603	636	1.1	1.1	1.1
High.....	554	597	675	764	2.5	2.5	2.5
Pepper.....							
Low.....	814	857	930	970	1.7	1.6	.9
High.....	814	874	982	1,104	2.4	2.4	2.4
Coconut: 2/.....							
Low.....	9.4	9.7	10.5	11.8	1.0	1.5	2.5
High.....	9.4	10.0	11.3	13.4	2.0	2.5	3.5
Palm oil:							
Low.....	2,710	2,880	3,110	3,350	2.1	1.5	1.5
High.....	2,710	2,880	3,110	3,440	2.1	1.5	2.0
Coffee:							
Estates:							
Low.....	615	629	729	845	.8	3.0	3.0
High.....	615	642	762	906	1.5	3.5	3.5
Smallholders:							
Low.....	448	648	715	782	13.1	2.0	1.1
High.....	448	668	765	875	14.2	2.8	2.7
Tobacco:							
Smallholders:							
Low.....	410	435	480	530	1.2	2.0	2.0
High.....	410	448	519	550	3.0	3.0	1.2
Virginia:							
Low.....	401	438	508	587	3.0	3.0	2.9
High.....	401	451	549	668	2.4	4.0	4.0
Rubber:							
Estates:							
Low.....	832	888	1,028	1,190	2.2	3.0	3.0
High.....	832	916	1,114	1,355	3.3	4.0	4.0
Smallholders:							
Low.....	542	563	600	697	1.3	1.3	3.0
High.....	542	564	559	736	1.3	3.2	2.2
Cotton:							
Low.....	198	300	300	300	11.0	.0	.0
High.....	198	300	350	400	11.0	3.1	2.7

Table 8--Import requirements of selected agricultural commodities, Indonesia, actual 1972 and projected 1975, 1980, and 1985

Commodity and projection	1972	1975	1980	1985	Average annual rate of growth		
					1972-75	1975-80	1980-85
		1,000 tons			Percent		
Rice:							
Likely.....	737	1/ 635	272	273	-4.9	-15.6	0.1
Wheat:							
Likely.....	472	666	927	1,379	12.2	6.8	8.3
Milk:							
Low.....	116	144	180	240	7.1	4.7	6.0
High.....	116	152	215	338	9.0	7.4	9.4
Tobacco: 2/							
Low.....	7.6	9.2	11.1	13.6	6.3	3.8	4.3
High.....	7.6	9.3	11.6	14.6	7.0	4.4	4.8
Tallow:							
Low.....	--	7.4	15.4	25.1	NA	15.8	10.3
High.....	--	7.9	17.8	32.1	NA	17.6	12.5
Cotton: 3/							
Low.....	25.3	29.6	23.9	11.5	5.3	-4.2	-13.6
High.....	25.3	30.3	30.2	38.9	6.1	.1	5.2

NA - Not available.

1/ Several rice import projections were made using different assumptions. The 1975 "most likely" projection assumes low production and consumption, and employs a 5-percent wastage factor.

2/ Assuming constant 1.5 percent of total consumption consists of tobacco imports.

3/ Low import is obtained from the difference between high production and low consumption, while high import is obtained from the difference between low production and high consumption.

Table 9--Exports of selected agricultural commodities, Indonesia, actual 1972 and projected 1975, 1980, and 1985

Commodity and projection	1972	1975	1980	1985	Average annual rate of growth		
					1972-75	1975-80	1980-85
					Percent		
	1,000 tons						
Corn:							
Low 1/.....	79.7	163	414	1,004	26.6	20.6	19.4
High 2/.....	79.7	551	891	1,647	90.3	10.1	13.1
Pepper:							
Low.....	24.3	24.9	28.5	29.9	0.9	2.7	1.0
High.....	24.3	25.6	30.6	35.8	1.8	3.6	3.2
Copra plus palm kernels							
(copra equivalent): 3/							
Low.....	139.0	89	28	-32	-13.8	-20.7	NA
High.....	139.0	91	52	-5	-13.6	-10.5	NA
Palm oil:							
Low 1/.....	243	318	416	530	9.4	5.5	5.0
High 2/.....	243	321	463	655	9.7	7.6	7.2
Tea:							
Low.....	39.6	38.9	38.4	35.5	-6	-2	-1.6
High.....	39.6	39.7	41.1	40.3	.1	.7	-.4
Coffee:							
Low.....	92	136	150	158	13.8	2.0	1.0
High.....	92	145	177	210	16.4	4.1	3.5
Tobacco: 4/							
Low.....	21.3	35.1	42.0	40.1	18.0	3.7	-1.0
High.....	21.3	36.1	44.8	45.8	19.2	4.4	.5
Rubber:							
Low.....	765	809	900	1,097	1.9	2.2	4.0
High.....	765	846	1,051	1,360	3.4	4.4	5.3

1/ Low production, high consumption. 2/ High production, low consumption. 3/ Total exports of coconut oil, copra, and palm kernels expressed in copra equivalent. 4/ High production.









**U.S. DEPARTMENT OF AGRICULTURE**  
ECONOMIC RESEARCH SERVICE  
WASHINGTON, D.C. 20250  

---

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE \$300

POSTAGE AND FEES PAID  
U.S. DEPARTMENT OF  
AGRICULTURE  
AGR 101

